The Texas A&M
University System

Texas Agricultural Extension Service

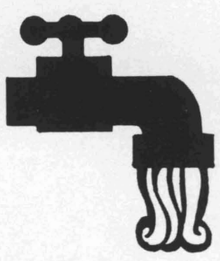
Zerle L. Carpenter, Director
College Station

PART 1

SAFETY RULES AND RECOVERY PROCEDURES AFTER A NATURAL DISASTER

GENERAL PRECAUTIONS

1. See that your family is safe from possible further harm from flood crests, fire, falling buildings or other hazards.
2. Do not go into disaster areas unless you have real help to offer. If you have left your home for shelter, you naturally will be eager to return. Use caution and discretion. Do not take chances. Washed out roads, downed power lines, scattered debris and other hazards can cause injuries and death.
3. Cooperate fully with local authorities, rescue squads and local Red Cross chapters.
4. Help locate shelter, food, clothing, transportation, medical supplies and medical help for victims.
5. Obey health regulations for personal and community protection against disease epidemics. Report any violations.
6. If there is any doubt about the safety of damaged or flooded buildings, do not enter them.
7. When entering damaged buildings, use flashlights only, *not* matches, torches or any open flame. Watch for nails, splinters, holes in walls or floors, wet or falling plaster, undermined foundations and gas leaks. Turn off the gas at the meter or tank. Do not turn on the electrical system until it has been checked by an electrician.
8. Guard against cuts from debris and unseen objects in contaminated water. Disease bacteria can cause serious infection.
9. Do not use food that has come in contact with contaminated water or debris. Some foods can be salvaged if properly packaged (see section, *Contaminated Foods*). Consult local health officials if in doubt.
10. Sanitize dishes, cooking utensils and food preparation areas before using them.
11. Boil or treat all drinking water until water authorities have tested it and certified it as being safe.
12. If premises have been flooded, flush plumbing drains with water to be sure they are open. Have health authorities inspect sanitary disposal systems.
13. Start clean-up as soon as possible, especially if flooding has occurred. Thoroughly dry and clean house before trying to live in it. Delay permanent repairs until buildings are thoroughly dry.
14. Control rodents and insects.
15. Remove sediment from heaters, flues and motors before using them. To speed drying, start stoves and furnaces as soon as they have been checked for safety.
16. Take all furniture and rugs outdoors to dry.
17. Dry and air bedding, clothing and rugs as soon as possible to prevent mildew.
18. Set priorities. Accomplish most important tasks first, and avoid physical overexertion.
19. Be sure children are safe and being cared for at all times. Never leave young children alone or allow them to play in damaged buildings or areas that might be unsafe.
20. Give special attention to cleaning children's toys, cribs, playpens and play equipment. Boil any items a toddler or baby might put in his mouth. Discard stuffed toys, water-logged toys and non-cleanable toys.
21. Keep chemicals used for disinfecting and poisons used for insect and rodent control out of the reach of children.
22. Wear protective clothing on legs, arms, feet and hands while cleaning up debris. Wear rubber gloves while scrubbing flood-damaged interiors and furniture.



SOURCES OF DRINKING WATER

One of the most crucial human needs is a supply of safe water. Every person in your family needs at least 2 quarts of water or other liquids daily (more in hot weather). You also need pure water for preparing food, brushing teeth and keeping clean.

Ice cubes and other water stored in your refrigerator are sources of safe water. Soft drinks and fruit juices are water substitutes. In addition, the water in water pipes and toilet flush tanks (not the bowls) is safe to drink. Close the valve on the main water line to the house before actual flooding occurs, or as soon as possible.

To use the water still in the pipes, turn on the faucet located in the highest point in the house. This lets air into the system. Then draw water from the lowest faucet in the house.

Your hot water heater or water pressure tank could supply many gallons of safe water in an emergency. Before using water from the water heater, switch off the gas or electricity that heats the water. Leaving the heating part on while the heater is empty could cause an explosion or burn out the elements. After turning off the gas or electricity, open the drain valve at the bottom of the tank. Do not turn the water heater on again until the water system is back in normal service.

If there is any doubt about the purity of these water sources, use one of the following methods to purify the water.

PURIFYING WATER

Unless you are absolutely certain your home water supply is not contaminated, purify all water before using it for drinking, preparing food, brushing teeth or dishwashing. If the water contains sediment or floating material, strain it through a cloth before treating it. If the water is cloudy, muddy or discolored, filter the water through clean cloths or allow it to settle. Pour or draw off the clear water to be disinfected. Water can be purified by boiling or by chemical treatment.

Boiling

Boil water at a rolling boil for 10 minutes to kill any disease-causing bacteria in the water. Add a pinch of salt to each quart of boiled water or pour several times between clean containers to improve the taste.

Chemical Treatment

If water cannot be boiled, treat it chemically. Two chemicals usually found in the home will purify water.

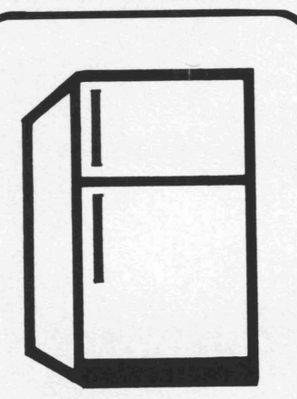
1. *Chlorine bleach.* Household bleach is a good disinfectant for water. However, check the label to be sure that hypochlorite is the only active ingredient in the bleach. *Do not use any bleach which contains soap.*

Percent chlorine	Add per gallon of water
1	40 drops
4-6	8 drops
7-10	4 drops
Unknown	10 drops (double for cloudy water)

   Mix the bleach thoroughly into the water. Let it stand for 30 minutes. The water should have a slight chlorine odor. If it does not, repeat the dose and let the water stand for an additional 15 minutes. The taste or smell of chlorine in the water is a sign of safety. If the taste or smell of chlorine is not detectable after these procedures, the water should not be used.

2. *Iodine.* Household iodine from the medicine chest or first aid kit will purify water. The iodine should be 2 percent United States Pharmocopeia (U.S.P.) strength. Add 20 drops per gallon of clear water, and 40 drops per gallon of cloudy water. Let stand 30 minutes.

   Water purification tablets available at drug and sporting good stores also will purify water. Follow manufacturer's directions.



SAFETY OF REFRIGERATED AND FROZEN FOODS AFTER A POWER FAILURE

If flood water has entered your freezer or refrigerator, throw away all food not sealed in metal cans.

If power has been interrupted or the refrigerator or freezer is not working properly, keep the door closed as much as possible to keep cold air inside. This will help prevent food from spoiling or thawing.

Foods in the Freezer

Thawing Rate

With the door closed, food in most freezers will stay frozen for 1 to 3 days, even in summer. Eat foods in the refrigerator and foods that thaw quickly first. Thawing rate depends on:

1. The amount of food in the freezer. A full freezer will stay cold longer than one partially full.
2. The kind of food. A freezer full of meat will stay cold longer than a freezer full of baked goods.
3. The temperature of the food. The colder the food, the longer it will stay frozen.
4. The freezer. A well-insulated freezer will keep food frozen longer than one with little insulation.
5. Size of freezer. The larger the freezer, the longer food will stay frozen.

Emergency Measures

1. Keep the door closed.
2. If possible, move food to a locker plant. To move food safely, wrap it in newspapers or blankets, or place it in insulated containers, such as camping coolers.
3. If you cannot take food to a locker plant, leave it in your freezer and cover freezer with blankets, quilts or crumpled newspapers.
4. If dry ice is available, allow 2½ to 3 pounds per cubic foot of freezer space. Twenty-five pounds of dry ice should keep the food in a half-full 18-cubic-foot freezer frozen for 2 to 3 days. Wear gloves when handling dry ice to prevent burns. In a chest-type freezer, place boards or heavy cardboard on top of the packages and place the dry ice on top of the boards. Place the dry ice on each shelf of an upright freezer.

When Food has Thawed

You may safely refreeze foods if they still contain ice crystals or if they have been kept cold, and have been thawed no more than 1 or 2 days. Treat completely thawed foods as follows:

1. *Fruits.* Refreeze fruits if they taste and smell good. Fruit that is beginning to ferment is safe to eat, although it will have an off flavor. Such fruit could be used in cooking.
2. *Vegetables.* Do not refreeze thawed vegetables. Bacteria in these foods multiply rapidly. Spoilage may begin before bad odors develop. Refreeze vegetables only if ice crystals remain. If you question the condition of any vegetables, throw them out.
3. *Meat and poultry.* Thawed meat or poultry may be unsafe. Examine each package. If odor is poor or questionable, throw the food out. Discard commercially stuffed poultry. Cook immediately any thawed but unspoiled meat or poultry. After thorough cooking, this meat can be refrozen.
4. *Fish and shellfish* are extremely perishable. Do not refreeze unless ice crystals remain. This food may be spoiled even if it has no bad odor.
5. *Ice cream.* Do not use any melted ice cream.

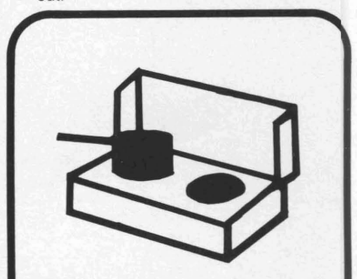
Foods in the Refrigerator

1. *Meat* will keep much longer if it is thoroughly cooked as soon as it is taken out of refrigeration. You can extend your food supply by cooking all unspoiled meat immediately and refrigerating it until you are ready to reheat and serve it.

   Meats apt to spoil quickly are large, solid, unboned pieces of fresh beef or lamb such as rump roast or leg of lamb.

   Chopped meats such as hamburger spoil quickly. Pork, fish and poultry spoil quickly. Throw them out if they have been out of refrigeration for several hours or more. Do not trust your sense of smell with these foods.

   Cured meats such as ham or bacon will be safe to eat, even after several days without refrigeration.
2. *Eggs* can be kept several days in a cool place without refrigeration, depending on the freshness of the eggs.
3. *Hard cheese* will usually keep well at room temperatures. Other cheeses, such as cream cheese, opened containers of cheese spreads and cottage cheese spoil quickly.
4. *Milk* spoils quickly without refrigeration. Do not use any milk with a sour smell or taste.
5. *Custards, creamed foods or any foods containing mayonnaise* spoil quickly and are likely growing places for organisms causing botulism poisoning. Throw out any of these foods if they have been warmed to room temperature. Spoilage often cannot be detected as there may be no bad odor or taste.
6. When in doubt about any food — throw it out.



PREPARING FOOD DURING A POWER FAILURE

Conserve Fuel

1. Consider the amount of cooking time needed for particular foods. If you have limited heat for cooking, choose foods that cook quickly. Prepare casseroles and one-dish meals, or serve no-cook foods.
2. Alternative cooking methods include:
   a. *Fireplace.* Many foods can be skewered, grilled or wrapped in foil and cooked in the fireplace.
   b. *Electric utensils.* If gas is cut off but you still have electricity, use electric skillets, hot plates or coffee makers to heat food.
   c. *Candle warmers* and other devices such as *fondue pots* may be used if no other heat sources are available. Use safety precautions with these devices. Never use fuel-burning camp stoves or charcoal burners inside your home, even in a fireplace. Fumes from these stoves can be deadly.
3. Do not cook frozen foods unless you have ample heat for cooking. Most frozen foods require considerably more cooking time and heat than canned foods.

Conserve Water

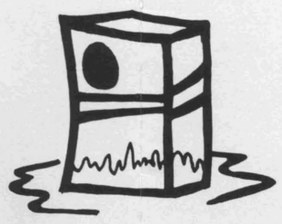
1. Save liquids from canned vegetables. Substitute these for water in cooked dishes.
2. Drain and save juices from canned fruits. Substitute these for water in salads and beverages.

Observe Health Precautions

1. Use only safe or purified water for cooking. Boil for 10 minutes.
2. If you are without refrigeration, open only enough food for one meal. Some foods can be kept a short time without refrigeration. Cooked vegetables, meat and meat dishes can be kept unrefrigerated from noon until the evening meal. Do not keep these dishes overnight without refrigeration.

   Do not serve foods that spoil easily, such as ground meats, creamed foods, hash, custards, meat pies and any food containing mayonnaise. These are potential sources of botulism poisoning.
3. If necessary, substitute canned and powdered milk for fresh milk. Canned milk will keep safely for a few hours after you open the can. If you are using canned milk to feed a baby, however, open a fresh can for each bottle. Use only boiled or disinfected water to mix powdered milk. Use powdered milk immediately after it is mixed.

   If safe water or water disinfecting material is not available, use canned or bottled fruit juices instead of water.
4. Prepare and eat foods in their original containers, if possible. This will help if dishwashing facilities are limited.



THE QUESTION OF CONTAMINATED FOODS

Contaminated food may be a problem following any storm involving flooding. Flood waters may carry silt, raw sewage, oil or chemical wastes. Filth and disease bacteria in flood water will contaminate food, making it unsafe to eat.

Inspect any food left in the house after a flood. Flood water may have covered it, dripped on it or seeped into it. Even though some foods (see below) are protected by their containers, if you are in doubt about the safety of a food, throw it out rather than risk disease.

Use the following guidelines when deciding which foods to discard and which to save.

Food to Discard

Do not attempt to save the following foods:

1. *Opened containers and packages* which have come in contact with flood waters.
2. *Unopened jars and bottles with paper seals* such as those containing mayonnaise or salad dressing.
3. *Containers of spices, seasonings and flavorings.*
4. *Flour, sugar and coffee in canisters.*
5. *Paper, cloth, fiber or cardboard boxes,* even if the contents seem dry. This includes salt, cereals, pasta products, rice and any "sealed" packages of crackers or cookies within a larger paper box.
6. *Dented, bulging or leaking tin cans.* Cans which have been tossed about and are found far from their normal storage spot. Seams on these cans may have been weakened or their seals broken, causing contamination or spoilage.
7. *Jam or jelly sealed with paraffin.*
8. *Containers with non-sealed, fitted lids,* such as cocoa or baking powder.
9. *Commercially bottled carbonated beverages,* if the cap is crusted with silt.
10. *Foil or cellophane packages.*
11. *All fresh vegetables and fruits that do not have a peel, shell or coating* that can be removed before use; leafy vegetables.
12. *Fresh meat, fish and poultry* that have been in contact with flood waters.
13. *Home canned foods,* even if the jar seems tightly sealed. (However, in some cases, tightly sealed home canned foods *may* be safe, depending on the flood conditions. If so, disinfect as described below.)

Food to Keep

The following foods are safe if you wash and sanitize containers before use, or wash, sanitize and peel fruits or vegetables:

1. *Undamaged tin cans.* For added safety, boil food before using. Be sure to wash and sanitize container (see below) before opening the can.
2. *Potatoes.* Wash, sanitize, dry, peel and cook before using.
3. *Citrus fruits.* Wash well, sanitize and peel before using.
4. *Apples and other fruits* that can be sanitized, peeled and cooked before eating. Do not eat raw fruit, even if it has been sanitized.

To Disinfect Cans and Commercial Glass Jars

All cans and commercial glass jars must be washed and sanitized before they are opened.

1. Remove labels and wash in a *strong* detergent solution with a scrub brush. Remove all silt.
2. Boil for 10 minutes and air-dry or immerse scrubbed containers for 15 minutes in a chlorine solution. Household bleaches contain from 2 to 6 percent chlorine. The amount of bleach to add to water would depend on the percent chlorine it contains.

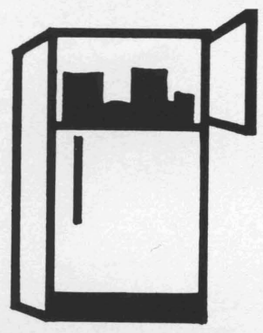
Percent chlorine in bleach	Volume of bleach[1] to add to 1 quart water	Volume of bleach to add to 1 gallon water
2	¾ tablespoon	2 tablespoons
4	1 teaspoon	1 tablespoon
6	½ teaspoon	¾ tablespoon

3. Remove containers from solution and air-dry before opening. Relabel if possible. Use as soon as possible as containers may rust. Store containers where they will not be recontaminated.

To Disinfect Fruits and Vegetables

1. Wash in a strong detergent solution with a scrub brush. Remove all silt.
2. Soak in a chlorine solution for 15 to 20 minutes. (See table above for strength of chlorine.)
3. Rinse thoroughly with safe drinking water.
4. Peel if possible, and cook thoroughly before eating.

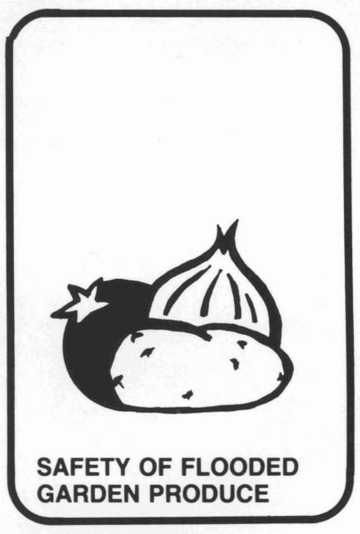
   Refer any specific questions to health authorities or your county Extension agent.



SANITIZING AND REMOVING ODORS FROM REFRIGERATOR AND FREEZER

If water has seeped into refrigerator or freezer, sanitize it before using it again. If insulation is wet, the appliance may have to be discarded eventually as it may run continuously, frost up on the outside or develop bad odors. Before cleaning and sanitizing a refrigerator or freezer, be sure motor and freezing unit are in safe working order.

1. Dispose of any spoiled or questionable food as described above.
2. Remove shelves, crispers and ice trays. Wash them thoroughly with hot water and detergent.
3. Rinse with a disinfectant solution (1 teaspoon chlorine bleach for each gallon of water).
4. Wash the interior of the refrigerator, including the door and door gasket, with hot water and baking soda, vinegar or household ammonia.
5. Rinse with disinfectant solution.
6. Leave the door open for about 15 minutes to allow free air circulation.
7. If odor remains, activated charcoal (available at drugstores) will soak up persistent odors. Spread about 3 ounces of the fine powdered charcoal on a sheet of aluminum foil or in a shallow pan and place on refrigerator or freezer shelf. Foods can be kept in the cleaned refrigerator with the charcoal. After 6 or 8 hours, heat the pan of charcoal in a moderate (350°F) oven to reactivate the charcoal so it can be reused. Put the charcoal back in the refrigerator. Repeat the process until the odor disappears.
8. Even if traces of the odor remain, securely wrapped frozen food will not be affected. When you take out a package, remove wrappings as soon as possible and dispose of them immediately.



SAFETY OF FLOODED GARDEN PRODUCE

If flood waters have covered a garden, some produce will be unsafe to eat. The safety of unharvested fruits and vegetables will depend on:

1. Kind of produce
2. Maturity of produce at the time of flooding
3. Time of year
4. Severity of flooding (depth of water and silt)
5. Duration of flooding
6. Bacterial content of floodwater
7. Likelihood of contamination from sewage or other bacterial contaminants

Immature Produce

In general, fruits and vegetables that were immature at the time of flooding should be safe to eat by the time they are ready for harvest. For additional safety, disinfect produce (see above) and cook it before eating.

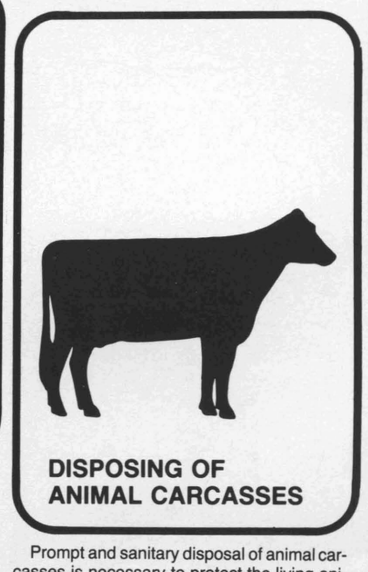
Mature Produce

Unless flooding was light and there is no danger of bacterial contamination from floodwater, avoid using fruits and vegetables that were ready for harvest at the time of flooding unless they can be disinfected, peeled and thoroughly cooked. Some fruits and vegetables are more susceptible than others to bacterial contamination.

1. *Leafy vegetables,* such as lettuce, cabbage, mustard, kale, collards, spinach, swiss chard and celery, and *fleshy vegetables and berry fruits* such as tomatoes, summer squash, strawberries and peppers would be highly susceptible to bacterial contamination. Silt and other contaminants might be imbedded in the leaves, petioles, stems or other natural openings of fleshy structures and could be difficult to remove.
2. *Root, bulb and tuber crops* such as beets, carrots, radishes, turnips, onions and potatoes would be less susceptible to bacterial contamination. Disinfect these vegetables, peel and cook them thoroughly before eating.
3. *Produce with a protected fruit or impervious outer skin,* such as peas, melons, eggplant, sweet corn or winter squash, should be washed and disinfected before the outer shell, skin or husk is removed. Then shell, peel, or husk the produce, and cook it if possible.

Disinfecting Measures

Thoroughly wash and disinfect any produce as directed above before eating.



DISPOSING OF ANIMAL CARCASSES

Prompt and sanitary disposal of animal carcasses is necessary to protect the living animals in an area from disease.

Search all pastures for dead animals as soon as possible. Carcasses may have some commercial value, so send them to a rendering plant if possible. If rendering is impractical, dispose of the dead animals on the premises. Use the following procedures:

1. Immediately after finding a carcass, cover it with crude oil or kerosene to keep away dogs, buzzards and vermin.
2. Fat swine are the only animal carcass that will burn satisfactorily. Used railroad ties can be used as starters.
3. Bury other carcasses. Use power equipment if it is available. Choose a site where subsurface drainage will not reach water supplies. Bury the carcasses at least 3 to 4 feet deep so predatory animals will not be able to reach them. If quicklime is available, cover carcasses with it before backfilling. Quicklime will hasten decomposition.

DISPOSING OF SEWAGE AND GARBAGE

Damaged sewage systems are health hazards. It is important to get damaged septic tanks, cesspools, pits and leaching systems into service as soon as possible.

If the area has been flooded, wait until the water level recedes before using sewage system.

Trained personnel in local and state health departments will help with these problems. They will be able to advise you about cleaning, repairing and relocating installations, if necessary. Problems with water purity, waste disposal or pest control also should be referred to them.

Septic Tanks

Most septic tanks will not be damaged by a flood, since they are below ground and completely covered. However, if the tank has been damaged and is more than half full with silt and debris, it must be cleaned. Use a shovel or sewage pump to clean the tank.

Do not use the sewage system until flood water is well below the disposal field.

If tile lines in the disposal field are filled with silt from floodwater, install a new set of lateral tile or perforated pipe in new trenches. Dig the new trenches alongside the old tile lines. Install the tile or pipe according to septic tank system installation specifications. The recommended normal grade is from 2 to 4 inches per 100 feet. Do not use the sewage system until new tiles are laid.

It may be necessary to wait a few days before returning a septic tank system to normal use. It will take some time for water to evaporate from saturated soil so that the tile field will be able to function again. Septic tank starter materials such as yeast enzymes or horse manure will not be needed.

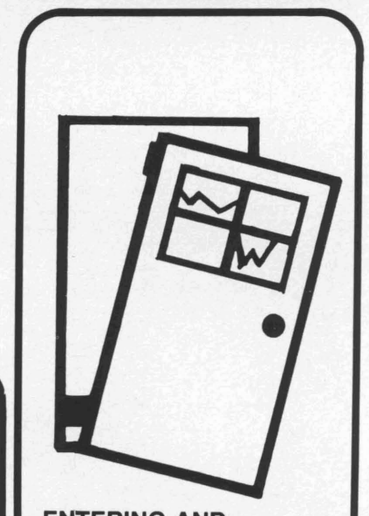
Temporary Sanitation

Until sewage disposal systems are back in normal working order, use any large container with a tight-fitting lid for a temporary toilet. Line the container with a plastic bag. After each use, add chlorine bleach or disinfectant to stop odor and kill germs. Powdered lime is an excellent disinfectant as it avoids adding moisture to waste.

A chemical camper's toilet is useful in disaster situations.

Garbage

Try to remove garbage as soon as possible to prevent rat infestations and other health problems. Some garbage can be burned. Bury garbage that will not burn. Dig a hole 4 or 5 feet deep, and cover garbage with at least 18 inches of soil.



ENTERING AND CHECKING DAMAGED BUILDINGS

Safety Precautions in Entering Damaged Buildings

Use extreme caution when entering any damaged building:

1. If gas lines are suspected to be open or broken, turn off gas at the meter or tank.
2. Do not touch fallen wires or any metal parts of buildings, such as metal roofs or gutters, which may be in contact with fallen power lines. Get help from your power supplier.
3. Disconnect the main electrical power switch and any other switches controlling outside equipment or other outbuildings. When touching any switches, stand on a dry board and use a dry stick or rubber gloves to pull handles. Do not use your electrical system until it has been checked and serviced, preferably by an electrician.
4. Do not enter any building until foundations, exterior walls and other support structures have been inspected and you are sure they will not collapse.
5. If you must enter at night, carry a flashlight or other light.
6. Do not smoke or use any open flame.
7. Wear gloves and heavy shoes. Watch for holes in floors, exposed nails, broken glass and sharp objects.
8. Watch for loose plaster and ceiling material that could fall.
9. Open as many doors and windows as possible to remove moisture, odors and flammable or toxic gases. If windows are stuck tight, take off side window strips and remove entire sash. If doors are stuck, drive out door hinge pins with a screwdriver and hammer and remove doors.

Foundations

If you are not qualified to judge the stability of a foundation, hire a contractor to make this inspection. A neighborhood might join together in hiring a contractor for this work.

1. Examine foundations and supports for undermining. If walls or foundations have settled or cracked, uncover footings and raise, reinforce or brace any settled sections. Be extremely careful when uncovering footings because of the possibility of cavernous washouts.
2. If underlying material has been washed away, fill spaces to within 12 inches of the footing with gravel or crushed rock. Fill the remaining space with concrete reinforced with steel rods.
3. Check piers for settling or shifting.
4. If the building has shifted or the floors have settled badly, it may be necessary to install temporary bracing until extensive work can be done.
5. Drain any crawl spaces that contain water.

Walls and Ceilings

1. Sweep or wash out mud, dirt and debris as soon as possible with a broom, hose, mop, cloth or sponge.
2. Start cleaning from the top floor or upper limit of damage and work downward.
3. Check walls with a level or plumb bob.
4. Brace walls where necessary.
5. Check connection of walls to foundation for material damage or separation.
6. To speed up drying of flooded studding and insulation, remove all siding strips or wall coverings from upper and lower parts of the walls. Do not repaint walls until they are completely dry. This may take several months. Flooded insulation may be ruined.
7. Remove loose or damaged materials. After house is completely dry, repair damaged walls and ceilings. Badly damaged walls can be resurfaced with new gypsum board or plywood.

Floors

Flooded wooden floors will dry out slowly. Do not apply spot heating to speed up drying as this could cause cracking or splitting from uneven drying. However, if the central heating system is operating, keep the temperature of the house at 60° to 70°F to hasten drying without causing additional problems.

1. To prevent further buckling and warping, drive nails where the floor tends to lift or bulge.
2. After floors are completely dry, plane or sand them level.
3. If floors are too badly damaged to be refinished, lay a new floor over the old, or cover with carpet, vinyl or linoleum.
4. If a concrete floor is badly damaged, break it up and install a new floor. If damage is minor, patch with a rich mixture of concrete containing no coarse gravel aggregate.

Roofs

1. Use plastic sheeting or roll roofing for temporary repair on solid deck roofs covered with asphalt shingles, wood shingles or roll roofing.
2. Use patching compounds to repair minor leaks.
3. You will probably have to replace damaged metal roofing on a spaced roof deck.

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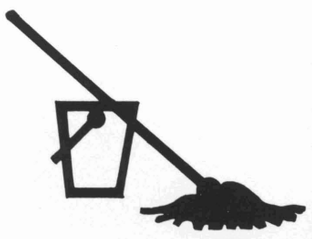


GETTING RID OF FLOOD ODOR

To get rid of the stench that often accompanies flooding, scrub all interior surfaces that were in contact with flood waters. Use hot, sudsy water followed by a rinse solution of 2 tablespoons sodium hypochlorite laundry bleach to a gallon of water. Or use a household disinfectant, following manufacturer's directions. Repeat the scrubbing and rinsing if necessary until odor is gone.

Odors are produced by bacteria as they biodegrade organic matter. Killing the bacteria destroys this process and the accompanying odor.

CONTROLLING RODENTS

Rats and other rodents may have moved into buildings to escape flood waters or destructive storms. Rats carry many diseases. They should be eliminated before major cleanup activities start to prevent scattering *them and their disease* hazard to other areas.

Entering Buildings

Because of the danger of rat infestation, use caution when entering damaged or flooded buildings.

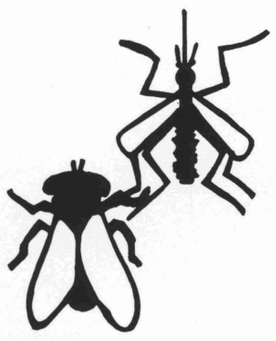
1. Carry a solid club and a flashlight.
2. Inspect likely hiding places for rats cautiously. Check closets, furniture, drawers, mattresses, appliances, upholstered furniture, stacks of clothes or paper, dark corners, attics and basements.
3. Be extremely careful when approaching rats. A starving rat can be dangerous.

Controlling Rats

To eliminate rat populations:

1. Poison rats that cannot be destroyed by clubbing or trapping. Use rat control measures as recommended by your county Extension agent and the local health department. They are in close contact with rodent control specialists. *Be extremely careful when using any rat poison or bait, especially if there are children in the house.* Follow directions on the label carefully.
2. After infestation has been controlled, clean up rat harboring places. (Rats may move into buildings when their hiding places are removed.) Remove trash piles and piles of damaged furniture or equipment. Store materials on platforms or shelves 12 to 18 inches above the ground.
3. Remove food sources. Store food supplies in rat-proof bins or containers. Suspend garbage containers from trees or posts. Remove animal carcasses that may attract rats. Do not leave scraps of food around.
4. Maintain several permanent rat bait stations in strategic locations, even after rat infestation has been controlled. This should eliminate rats that migrate from neighboring areas and will help prevent another infestation. Inspect baits frequently and replace them with fresh material whenever necessary.

If you are bitten by a rat, try to kill or capture the animal and take it to local health authorities or a veterinarian to have it checked for rabies.



CONTROLLING INSECTS

After a natural disaster, especially one involving flooding, mosquitoes, flies and other insects may be more abundant than usual, posing potential health problems. Filth and debris left by the storm create excellent breeding conditions for houseflies and mosquitoes, some of which can spread typhoid, dysentery and encephalitis. To control insects, remove their breeding places (any standing water, especially stagnant water). In warm weather this should be done as soon as you return to the premises.

Eliminate Breeding Sites

Empty water from barrels, old tires, cans and other containers. Many kinds of mosquitoes can be severe nuisances as well as carriers of diseases. The most troublesome kinds are those that breed in temporary rain pools, flooded areas, salt marches, ponds and water trapped in tin cans and other containers. Receding water from tides and rivers is trapped in ditches, ruts, under buildings and other places where the "wigglers" or larvae can develop. During the cleanup operation, efforts should be made to eliminate areas of standing water and to empty tin cans, vessels and other containers in which water has collected.

If drainage is impossible, treat water puddles still standing after a week with larvicide oil or an approved insecticide as recommended by your county Extension agent.

Dispose of Refuse

Accumulation of debris, animal carcasses and other decaying organic matter and the disruption of sanitary facilities in some areas create favorable breeding areas for houseflies. Rapid and thorough cleanup of these areas is the first step in controlling these disease- and filth-carrying insects. Bury garbage and any animal carcasses if not stored in tightly sealed plastic bags for immediate pickup and disposal.

Scorpions do not reproduce as rapidly as houseflies or mosquitoes, but they will appear frequently following storms. Scorpions are active at night, hiding during the day beneath loose stones, loose bark or fallen trees, boards, piles of lumber, and within walls of buildings. The elimination of breeding and hiding areas will help to protect the area in and around the home. If severe pain or slight systemic disorder should occur as a result of the sting, bathe the affected area with a weak ammonia solution. Obtain medical aid if this does not give relief.

Repair

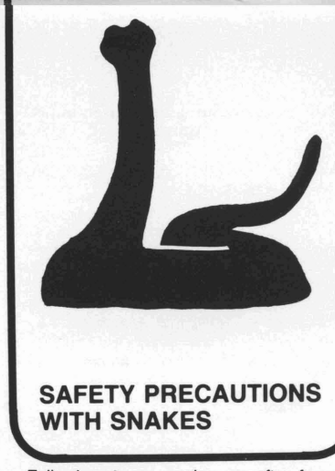
Patch screens and other places where mosquitoes may enter buildings. Paint screens with an approved insecticide solution recommended by your county Extension agent.

Spray

Use chemical sprays to kill mosquitoes, flies or other insects that get into buildings. All food should be covered or stored where flies or sprays cannot contaminate it. Do not apply oil-based sprays to flowers or ornamental plants. Spray shrubbery and shaded areas of buildings to kill adult insects. Contact your county Extension agent for specific insecticide recommendations.

Use a Repellent

If possible, keep small children indoors, especially in the evening. Persons who must go outside at dusk should use a repellent on exposed parts of the body and clothing.



SAFETY PRECAUTIONS WITH SNAKES

Following storms, snakes are often forced into places where they are not usually found. If you live in an area where poisonous snakes are common, take the following precautions:

1. Know how to identify poisonous snakes common to your area.
2. Be alert for snakes in unusual places. They may be found in or around homes, barns, outbuildings, driftwood, levees, dikes, dams, stalled automobiles, piles of debris, building materials, trash or any type of rubble or shelter.
3. Keep a heavy stick or some other weapon handy.
4. Before beginning any clean-up or rescue operations, search the premises thoroughly for snakes. They may be under or near any type of protective cover.
5. In rescue or clean-up operations, wear heavy, leather or rubber high-topped boots and heavy gloves. Wear trouser legs outside boots. Be extremely careful around debris. Use rakes, pry bars or other long-handled tools when removing debris. *Never* expose your hands, feet or other parts of your body in a place where a snake might be.
6. After dark, carry a strong light.
7. Explain to children the dangers of snakes under storm or flood conditions and the precautions they should follow. Do not allow children to play around debris.
8. If you kill a poisonous snake, use a stick, rake or other long-handled tool to carry the snake away for disposal. Snakes may bite even after they appear dead.
9. If you realize you are near a snake, avoid any sudden movement which may cause the snake to strike. If you remain still, the snake may leave. If the snake does not move away from you after a few minutes, slowly back away from it.
10. If someone is bitten by a poisonous snake, call a doctor immediately.

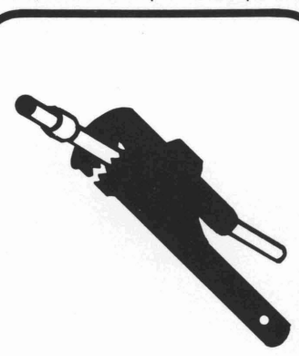
Controlling Snakes

To get rid of snakes in buildings and to prevent others from entering:

1. Remove snakes' food supply. Eliminating rats and mice from an area discourages snakes.
2. Remove snakes' hiding places. Get rid of lumber piles, trash piles, high weeds and grasses and debris.
3. Block openings where snakes might enter buildings. Snakes can pass through extremely small openings and usually enter near or below ground level. Be sure doors, windows and screens fit tightly. Search walls and floors for holes or crevices. Inspect the masonry of foundations, fireplaces and chimneys; plug or cement cracks. Plug spaces around pipes that go through outside walls. Fasten galvanized screen over drains, ventilators or large areas of loose construction.

RESTORING WATER, ELECTRIC, HEATING AND A/C SYSTEMS

If possible, obtain the help of competent servicemen to check and restore these services. If repairmen are not available, you may have to make the repairs yourself. Use the following guidelines and *proceed with extreme caution.* If you are unfamiliar with any system, wait for an experienced repairman.



RESTORING WATER SYSTEMS

Public Systems

Public water supplies should not be used as a source of drinking water until certified as safe by local health authorities.

Wells

Wells may be contaminated with silt if flooding has occurred. If so, disinfect your well as described below and have your well tested by health officials before using the water for drinking.

Electric Motors and Switches

Be sure the power is off before cleaning or repairing electrical switches and motors. Do not start submerged electric motors until they have been cleaned, dried and checked for safety.

1. *Disconnect the motor.* An ejector or jet pump motor may be a separate unit mounted on the pump; or the end bell of the motor may be part of the pump. The separate motor unit can be disconnected and serviced easily. With the second type, remove the pump and motor as a unit. It is not necessary to remove the drop pipes.
2. *Take the motor to an electrical repair shop.* In the shop, the motor should be checked for any short circuits or grounding caused by moisture. If the motor was submerged in mud and water, it should be thoroughly cleaned. Windings should be dried in a drying oven. The bearings should be lubricated before you use the motor again.
3. *Clean and dry electrical controls and pressure switches.* Check all wiring for short circuits.

Pumps

Pumps are usually damaged by sediment deposited in the bearings. Clean pumps and check valves for silt and sand. Remove all dirt and water from the gears in the gear box and replace the lubricant with fresh oil.

1. *Submersible pumps.* The bearings on water-lubricated pumps will not be damaged by flood waters as these bearings are constantly submerged in water. As soon as possible, flush clean water down the casing to remove sediment and silt. Then, disinfect the well.
2. *Centrifugal pumps.* Many centrifugal pumps contain two sets of oil-lubricated bearings along the drive shaft between the motor and the pump. If the pump has been flooded, dismantle the container bracket and remove the bearings. Clean the bearings or install new bearings if the old ones are worn out.

   Close-coupled centrifugal pumps contain no bearings, so there is little chance of flood damage, except to the electric motor.
3. *Injector-type pumps.* These pumps usually contain water-tight packing at the ground surface, with sealed impellers. Flood waters will probably not damage this type of pump.

Storage Tank and Piping

Storage tanks and piping should be all right unless muddy water was pumped through them. If a tank is contaminated, disinfect the entire system with a strong chlorine solution. Use 1 quart of household laundry bleach (5.25 percent chlorine as only active ingredient) for each 100 gallons of water in the tank and piping.

Open all faucets while the system is being filled. Do not close the spigot until a definite smell of chlorine is evident. Do not use the system for 24 hours. Then start the pump and run water from all faucets until the chlorine odor is gone.

Disinfecting Wells

To disinfect a well system:

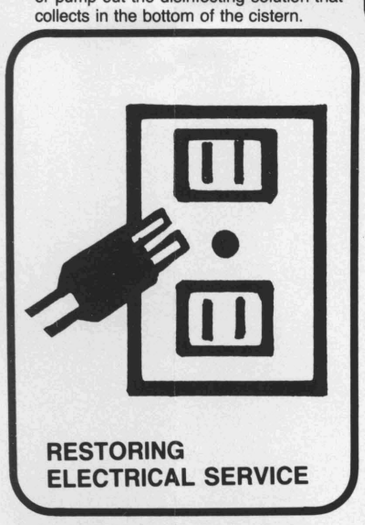
1. Scrub the pump room and wash all equipment, including piping, pump and pressure tank.
2. Open a faucet near the well and pump the well until the water is clear.
3. Prepare a solution of disinfectant, according to the size of your well, using liquid laundry bleach (5.25 percent chlorine as its only active ingredient) mixed with about 3 gallons of water.

   About 1 quart of bleach should be used for each 100 gallons of water in the well. For example, if your well is 4 inches in diameter and contains 100 feet of water, use 1 pint of bleach. If your well is 6 to 8 inches in diameter and contains 100 feet of water, use 2 quarts of bleach. Use less in each case for water levels of less depth.
4. Remove the well seal at the top of the casing. Pour the prepared solution into the well. Pour the solution so it washes down the inside of the casing and the outside of the drop pipes. In some wells, you will need only to remove a plug from the seal to pour the solution into the well.
5. Leave the solution in the well at least 4 hours, preferably overnight.
6. Pump the chlorinated water into all piping by opening each faucet until the odor of chlorine is apparent. Leave the chlorine in the piping for at least 2 hours or overnight.
7. Then, pump and flush out the system at each faucet until the odor of chlorine is no longer apparent.
8. Contact local health authorities and take a sample of water according to their recommended procedures and have it tested for purity.
9. Boil or treat all drinking water until a water test indicates that water is safe for all purposes.

Cisterns

Do not drink water from a flooded cistern until you disinfect the cistern and the entire piping system. To disinfect the cistern:

1. Use an auxiliary pump to remove the water and empty the cistern. Do not pump water through the pipeline distribution system.
2. Wash down the walls and ceiling with clean water and pump out the dirty water with an auxiliary pump.
3. Check the cistern walls, ceiling and floor for cracks where ground water could come in.
4. Disinfect the interior with a solution of 1 quart liquid laundry bleach in 3 gallons of water. Be sure the bleach contains no soap. Apply the chlorine solution with a sprayer or scrub with a stiff broom. Swab or pump out the disinfecting solution that collects in the bottom of the cistern.



RESTORING ELECTRICAL SERVICE

After a storm, your electrical system should be thoroughly checked and repaired by an electrician. Do your own repairing only if such service is unavailable and you are experienced enough. Proceed as follows:

Caution. Wear rubber gloves and rubber-soled boots for all work with electrical circuits. Rubber is an insulator and will help protect you from shocks.

Turn Power Off

1. Disconnect the main electrical power switch to all buildings and equipment. When touching any switches, stand on a dry board and use a dry stick or rubber gloves to pull handles.
2. Remove all branch circuit fuses or place circuit breakers in "off" position to insure that power is off.
3. Disconnect all plug-in equipment and turn off the switch at each piece of permanently connected equipment. Unscrew all light bulbs.

Clean and Dry the System

If any flood water entered your home, electrical outlets and switches are probably wet. They must be dried before service can be restored.

1. Remove the covers from switches, convenience outlets and other electrical connections.
2. Pull receptables, switches and wires about 2 inches out from their boxes. *Do not disconnect the wires.*
3. Clean mud, dirt and silt from switches, sockets and boxes with water and a soft-bristled brush. Check for damage.
4. Allow electrical wires and connectors to dry completely. This may take days depending on how wet the system is and whether heat is available.
5. Use extreme caution in cleaning mud and dirt from the main entrance box. Because the power line enters here, this is the most hazardous part of the electrical system to work on. Assume the power line is hot even if a test light shows power is off. Never hose out this switchbox. Wear rubber gloves and rubber-soled shoes. Do not touch anything wet or stand in water while working on the box. Stand on dry wood plank.

   In an emergency, pull the electrical meter from its base to disconnect the power. Notify the electric company that you broke the seal.

Check the System for Electrical Shorts

1. While standing on a dry board or ladder and wearing rubber gloves and rubber-soled shoes, check the main switch box to be sure all fuses are removed.
2. Close the main switch and look for sparks or smoking wires at the main switch box. These indicate shorted switch connections. If you see evidence of such shorts, carefully try to correct the problem. You may need a new main switch.
3. If the main switch is in working order, open the switch and insert a fuse in *one* branch circuit.
4. Close the switch to check for shorts in that branch circuit.
5. If the fuse does not blow immediately, wait at least 15 minutes to check for slower electrical leaks. Carefully inspect all parts of the branch circuit you are checking. If thre are any signs of sparks, smoking or heating, if the fuse blows or the circuit breaker trips, remove all fuses and open the main switch. You may need to do additional cleaning or drying, or you may need to replace circuit parts.
6. Repeat steps 2 to 5 for each of the other circuits, *one at a time.*
7. After you have checked all the circuits and found them in good condition, once again remove all fuses and open the main switch. Push wires and electrical receptacles, switches and light outlets back into junction boxes. Replace covers. Then, check each branch circuit again, one at a time, by replacing one fuse at a time and closing the main switch.
8. If everything is okay, close the main switch.
9. For 24 hours be careful when using receptacles and switches. There may be slow leaks which could cause shocks. Do not plug in electrical appliances that have been flooded until they have been reconditioned.
10. If some circuits are faulty, use only the undamaged circuits. Do not overload undamaged circuits with too many lights or appliances until normal capacity is restored.

    Some newer homes may have a ground fault circuit interruption system with their circuit breakers. This probably will need to be replaced.

CLEANING AND RECONDITIONING FLOODED HEATING AND A/C SYSTEMS

Heating systems should be restored promptly to help dry your home if flooding has occurred.

Before lighting a heater or firing a furnace, inspect and clean any sediment from heating apparatus, including burners, pumps, motors, coils, controls, elements, gears, fans, tanks and housings. Nonelectric parts can be cleaned with a hose or swab on a long stick. Flues usually can be reached through cleanout doors.

Chimneys

Inspect chimneys promptly. Fires and carbon monoxide poisoning can result from defective chimneys.

1. Take out the smoke pipe connection from the heater or furnace to the chimney and reach through to assure an unobstructed draft.
2. Inspect chimney for damage, especially where passing through floors and roof.
3. Repoint cracks and breaks in joints with masonry cement.
4. Rebuild broken or damaged sections.
5. If the chimney looks like it has settled or tilted, examine the footing to see if it has been undermined. Rebuild the chimney if it has settled badly.

Natural, Propane or Butane Gas Installations

1. Contact your local dealer before attempting to use your range, water heater or furnace.
2. Do not smoke or light a match to look for gas leaks. Rub soapy water on pipes to check for leaks. Bubbles appearing indicate a leak. Or, have a serviceman check for gas line leaks and examine burners and controls.
3. Have a serviceman clean and recondition equipment.

Electric Systems

Treat an electric resistance heating system as part of the electrical wiring system cleanup.

Air Conditioning Systems

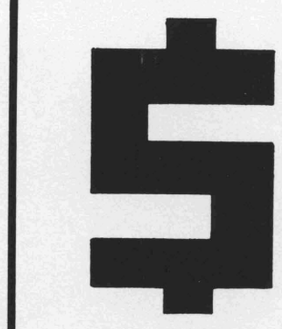
Electrical components of air conditioning systems should be checked and repaired as discussed in "Restoring Electrical Service." However, before attempting to check switches and motors there are several things that should be done.

1. Remove access panel to outside condenser unit and fan. Clean out sediment and trash from the housing, fan, controls, and coil. Leave panel off for a time to allow for thorough drying.
2. If water entered any window units, these should be disconnected and removed from their mounting. Place them in a dry place and remove the outer cover. Clean any trash or sediment from the housing. A hose can be used if done carefully.
3. Inside central air conditioning coils are usually installed in conjunction with the heating system. If physical or water damage is suspected, remove heating unit access panel and clean the fan housing, change filter, dry unit parts and check for damage.
4. Most air conditioning units are sealed and except for electrical components are not easily damaged by standing water. If there is a broken refrigerant line, a serviceman will be required to repair or replace damaged parts.

STEPS IN MAKING AN INSURANCE CLAIM

1. *Immediately contact your insurance agent* and report the damage. Give your name, address, policy number and the date and time of loss. Tell your agent where you can be reached. Be patient. Remember that a high volume of claims must be handled in a disaster and are handled on a priority basis according to need.
2. *Read your policy.* Some claims are missed because the policyholder is not aware of the protection provided. If you do not understand the policy, ask your insurance agent to explain your coverage.
3. *Write down what happened.* Give a complete description of damage and the exact time it happened.
4. *Take pictures of the damage, if possible,* before beginning repairs. If you repair small items such as TV antennas, window coverings or fences before the adjuster arrives, it may be difficult to prove the damage. Pictures also can be used as evidence for tax deductions.
5. *Protect your property from further damage or theft.* Patch roofs temporarily. Cover broken windows with boards or plastic. If household furnishings are exposed to the weather, move them to a safe location for storage. Keep all receipts.
6. *Dry out water-damaged furnishings and clothing* as soon as possible to prevent fading and deterioration. You may wish to take some items to a reliable dry cleaners.
7. *Keep accurate records:*
   a. List all cleaning and repair bills, including materials and cost of rental equipment.
   b. List all flood-related living expenses, including motel and restaurant bills, home rental and car rental.
   c. List all actual losses, including furniture, appliances, clothing, paintings, artifacts, food and equipment, regardless of your intent to replace the objects. Photographs of ruined homes or objects are excellent evidence for later documentation.

      Try to document the value of each object lost. Bills of sale, cancelled checks, charge account records and insurance evaluations are good evidence. If you have no such records, estimate the value and give purchase place and date of purchase. Include this information with your list.
8. *Contact a reputable firm to have your damage repaired.* Beware of door-to-door salesmen. Sometimes, undependable workers enter a damaged area, make cheap repairs and leave before residents discover that the repairs are inadequate. If your local contractor cannot do the work, ask him to recommend someone.
9. *Do not be in a hurry to settle your claim.* Although you may want to have your damage claim settled as quickly as possible, it is sometimes advisable to wait until all damage is discovered. Damages which have been overlooked in an early estimate may become apparent later.



CREDIT SOURCES FOR DISASTER REHABILITATION LOANS

Homeowners and farmers with property damage from natural disaster may be eligible for financial assistance. A variety of lending agencies may be consulted.

1. *Commercial banks* offer short-, medium-, and long-term loans for home repair, home improvements, land, equipment and livestock. Compared to other credit sources, banks offer high interest rates, but terms may be more liberal.
2. *Federal land banks* (NFLA) offer long-term loans at moderately low interest rates for home repairs, improvements, land, equipment and livestock.
3. *Insurance companies* offer long-term loans at relatively high interest rates for home repair, improvements, land, equipment and livestock.
4. *Merchants and dealers* extend credit for feed, equipment and rehabilitation of buildings and land.
5. *Individuals* offer credit for various purposes with varying interest rates and terms.
6. *Farmers Home Administration* (FHA) offers agricultural loans only when other credit is not available. Qualifying farmers in disaster areas can get short-, medium- and long-term loans with moderate interest rates.
7. *Small Business Administration* offers medium- and long-term loans for rehabilitation of nonfarm homes and small businesses. Interest rates are relatively low. Farmers should apply to the Farmers Home Administration.
8. *Agricultural Conservation Program* (ASCS) offers payments for land leveling, fencing and reseeding. Prior approval is required and specifications are subject to change.
9. *Salvation Army, Red Cross,* local churches and state church organizations can offer assistance for immediate needs.
10. State agricultural, health and other agencies should also be consulted.

INCOME TAX DEDUCTIONS FOR PROPERTY DAMAGE

Property or theft losses from natural disaster are tax deductible. Such deductions, which are allowed for partial or total loss of personal or business property, could greatly reduce the amount of federal income taxes owed for the year the disaster occurred.

Records

If you claim a theft or casualty loss resulting from a disaster, you may be asked to show:

a. The kind of disaster and when it occurred.
b. That the damage was a direct result of the disaster.
c. That you were the owner of the property.
d. The cost of the property plus the cost of any improvements.
e. Depreciation allowed or allowable, if any.
f. Fair market value before and after the disaster.
g. Any insurance benefits or other compensation received, including free repairs, restoration and cleanup from any disaster relief agencies.

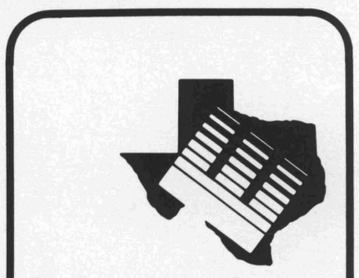
Before and after photographs, receipts, cancelled checks, deeds, purchase contracts and professional appraisals are good supporting evidence for casualty claims.

Appraisal

If either personal or business property has been damaged extensively, you should have the property appraised as soon as possible following the disaster. A professional estimate of value will serve as evidence for casualty loss claims. The fee charged is also a deductible item.

How to Figure Deductions

For details, contact your local tax representative for advice on figuring tax loss deductions. Or, consult *Tax Information on Disasters, Casualty Losses and Thefts,* printed by the Department of the Treasury Internal Revenue Service. Ask for publication #547, available at any Internal Revenue office.



The Extension Way **People Helping People**

OTHER INFORMATION AVAILABLE FROM YOUR COUNTY EXTENSION AGENT

Disaster recovery information to help you salvage, recondition and repair your property is available from your county Extension agent on the following topics:

Preparation

- Priorities for cleanup and repair
- Supplies and equipment for home cleanup
- Cleaners and disinfectants
- Mildew-removing products

Buildings

- Checking buildings for hidden wind damage
- Finding and repairing leaks in roofs
- Opening flooded windows
- Replacing broken window panes
- Cleaning flooded floors and woodwork
- Treating warped and delaminated floors
- Drying walls
- Cleaning interior walls
- Repairing exterior siding
- Patching plaster
- Installing wallboard
- Installing paneling
- Wallpapering

Home Furnishings

- Reconditioning flooded electrical appliances
- Reconditioning flooded electric motors
- Salvaging sewing machines
- Sanitizing laundry equipment
- Cleaning flood-soiled pillows and mattresses
- Cleaning flood-soiled blankets, quilts, comforters, linen
- Drying books and family papers
- Cleaning flood-soiled clothing
- Removing mud stains from white fabrics
- Cleaning flood-soiled leather articles
- Cleaning household metals
- Cleaning and sterilizing dishes and cooking utensils
- Repairing flooded tile, linoleum and vinyl floor coverings
- Cleaning flood-soiled rugs and carpets
- Deciding which furniture to salvage
- Straightening warped furniture boards
- Salvaging flooded wooden furniture
- Salvaging flooded upholstered furniture

General

- Replacing valuable papers and documents

Crops, Trees, Plants, Soils, Pesticides

- Weed control
- Damaged shade, ornamental and fruit trees
- Salvaging flood-damaged shrubs and ornamentals
- Flooded pesticides
- Tips for handling flooded soils
- Caring for flooded lawns
- Salvaging partially uprooted trees

Farm Equipment

- Reconditioning farm machinery
- Reconditioning trucks and automobiles
- Reconditioning tractors and other engines
- Cleaning electric motors
- Reconditioning farm implements

Grain and Forage

- Salvaging stored wet feed
- Salvaging stored wet grain

Livestock

- Maintaining livestock health after a flood
- Flood-related diseases in poultry and livestock
- Diet supplements for livestock — protein, Vitamin A, minerals
- Feeding water-damaged feeds